

A new species of *Solenopotes* Enderlein (Anoplura:  
Linognathidae) from an African antelope

by

J. A. LEDGER

Department of Entomology, South African Institute for Medical Research

The anopluran genus *Solenopotes* Enderlein, 1904 has in the past been considered to parasitize only members of the family Cervidae of the order Artiodactyla. There is one exception: *S. capillatus* Enderlein, 1904 is a widespread parasite of domestic cattle. Ferris (1932; 1951) considers that this species is a secondary parasite that has transferred from an unknown wild cervid to domestic cattle, on which it now occurs in Europe, North America (Ferris, 1951), Australia (Roberts, 1950) and South Africa (du Toit, 1968). It probably occurs in other countries as well, introduced on imported stock.

Ferris (1932) gave detailed descriptions of the following species: *S. capillatus*, *S. binipilosus* (Enderlein, 1916), *S. ferrisi* (Fahrenholz, 1919), and *S. burmeisteri* (Fahrenholz, 1919). In 1951 Ferris published a key and summarized the available information on the genus, listing seven species: *S. binipilosus* on *Mazama* and *Odocoileus* (North and South America); *S. burmeisteri* on *Cervus elaphus* (Europe); *S. capillatus* on domestic cattle (cosmopolitan); *S. capreoli* Freund, 1935 on *Capreolus caprea* (Europe); *S. ferrisi* on *Odocoileus columbianus* (North America); *S. muntiacus* Thompson, 1938 on *Muntiacus muntjak* (Ceylon); *S. tarandi* (Mjöberg, 1915) on *Rangifer tarandus* (Europe). Johnson (1958) resurrected *S. panamensis* (Ewing, 1927) which had been placed in synonymy to *S. binipilosus* by Ferris (1932; 1951). The type material of *S. panamensis* came from *Odocoileus virginianus chiriquensis*, but Johnson (1958) doubts whether this is the true host. Johnson (1962) redescribed *S. muntiacus* and provided good illustrations.

Through the courtesy of Mr B. Lamoral, Natal Museum, Pietermaritzburg, I recently received a collection of lice taken from steenbok, *Raphicerus campestris*, in Natal. Two species were present; *Linognathus raphiceri* Fiedler & Stampa, 1956, and several specimens of *Solenopotes* which are described as a new species below. This interesting discovery represents an extension of the host-range of *Solenopotes* to wild African Bovidae. I also have before me a single female *Solenopotes*, belonging to another undescribed species, collected from springbok, *Antidorcas marsupialis*, at Bloemhof, Transvaal in 1969. It seems likely that *Solenopotes* will be found on other wild African Bovidae in the future, and collections of lice should be carefully checked for examples of *Solenopotes* among the more numerous *Linognathus* which are usually encountered.

***Solenopotes natalensis* spec. nov., figs 1–6**

Type-host: *Raphicerus campestris* (Thunberg, 1811)

HOST DISTRIBUTION. Discontinuously distributed between southern and eastern Africa; absent from Zambia (except in the southwest), from Mozambique north of the Zambezi, and from Malawi (Ansell, 1968).

FEMALE. General appearance and chaetotaxy as in fig. 1.

*Head.* As in fig. 2. Large sensory discs on terminal and subterminal antennal segments.

*Thorax.* Rather weakly sclerotized dorsally, the typical pattern for the genus (as described by Ferris, 1932) barely visible, but distinct in some of the specimens;

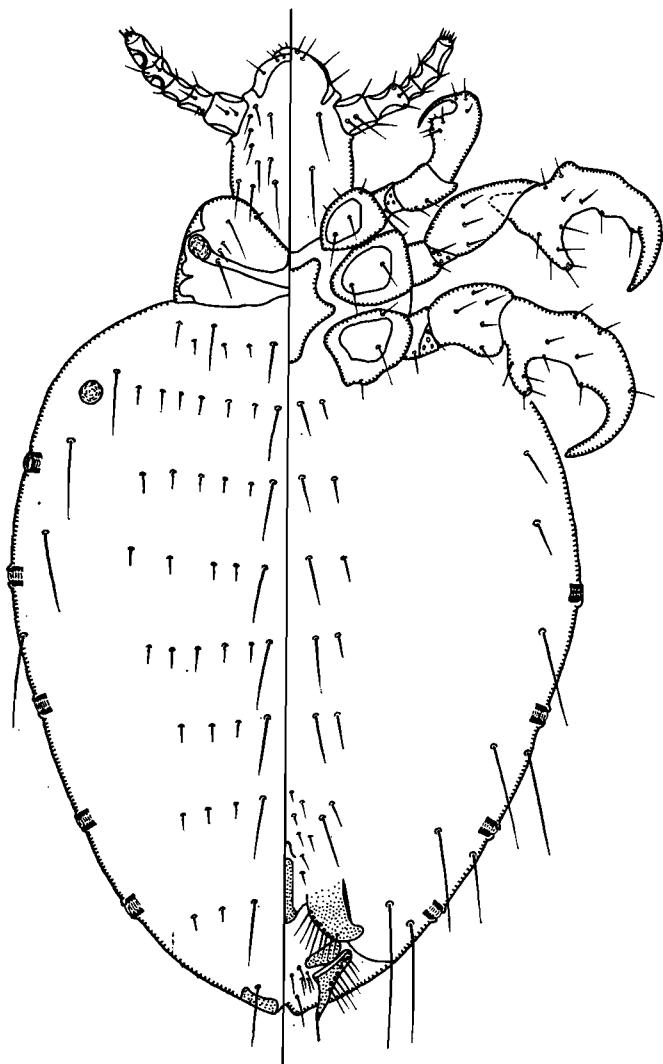


Fig. 1. *Solenopotes natalensis* spec. nov. Female, dorsal/ventral view.

dorsally 1 short, 1 long anterior setae each side, 1 long, 1–2 short setae associated with each thoracic spiracle. Sternal plate well-developed, pentagonal, as in fig. 3.

*Dorsal abdominal chaetotaxy.* Tergites I–VIII with a pair of stout setae centrally, additionally a rather variable number of shorter setae forming a row across the tergite. Range of total setae on tergites: I, 9–11; II, 12–17; III, 10–13; IV, 5–14; V, 8–12; VI, 9–10; VII, 6–11; VIII, 3–9. Terminal tergite with 1 long seta each side.

*Spiracles.* Short and cylindrical, each borne on a small sclerotic tubercle; 2 setae posterior to each spiracle on III–VIII. On anterior segments the setae are arranged 1 dorsal, 1 ventral; posteriorly both are found on the ventral surface of the abdomen. There is also progressive increase in length and thickness posteriorly; on III & IV the ventral seta is shorter than the dorsal one.

*Ventral chaetotaxy.* Sternites II–VII each with 4 setae centrally, the inner pair longer than the outer pair. Terminal segment as in fig. 4.

*Genitalia.* As in fig. 4. Median sclerotization present, expanded slightly at the vulval margin, which is smooth and elongated posteriorly. Gonapophyses divergent, with a narrow lateral strip of sclerotization; apical margins smooth, projecting hook-like laterally. Apical lobes narrow, triangular, with slender tapering processes; a sclerite between apical lobe and gonapophysis each side.

**MALE.** Slightly smaller than female, otherwise similar in details of head, thorax, abdominal spiracles and their associated setae.

*Abdomen.* As in fig. 6.

*Dorsal chaetotaxy.* Central pair of stout setae present only on I–IV; shorter setae make up rows on I–VIII. Range of total tergal setae: I, 8–11; II, 12–17; III, 9–15; IV, 9–11; V & VI, 9–12; VII, 7–10; VIII, 3–5. Terminal segment dorsally with lateral lobes bearing setae, a group of 3 setae each side on the genital margin, and 3 marginal anal setae each side (see fig. 6).

*Ventral chaetotaxy.* II–VII with 4 central setae, the inner pair longer than the outer; VIII with 2 central setae (1 specimen with 3).

*Genitalia.* As in fig. 5. Parameres long and tapering; pseudopenis apparently lacking; penis borne at the apex of a large plate (statumen penis) which has a narrow anterior region extending forward to the basal articulation of the parameres. Basal apodeme widened anteriorly and terminating in an irregular margin. Subgenital plate lyriform, as in other members of the genus.

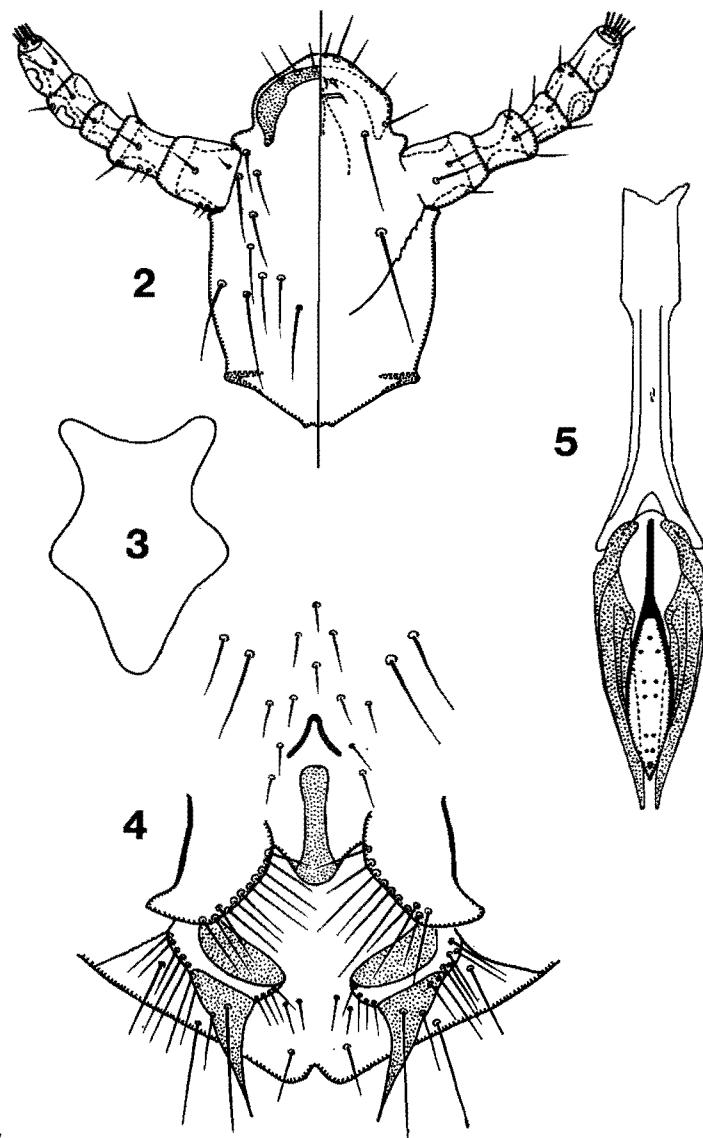
#### DIMENSIONS. (mm)

	<i>Female</i>	<i>Male</i>
Head length	0·31–0·32	0·29–0·31
Head width	0·19–0·20	0·18
Total length	1·5	1·2

**HOLOTYPE.** ♀ ex *Raphicerus campestris*, Empangeni, Natal, South Africa (12.viii.1967).

**PARATYPES.** 4 ♂♂, 3 ♀♀, same data as holotype.

The holotype and 2 ♂♂, 1 ♀ paratypes have been deposited at the South African Institute for Medical Research, Johannesburg; 1 ♂, 1 ♀ paratypes at the British Museum (Natural History), London; 1 ♂, 1 ♀ paratypes at the United States National Museum, Washington.



Figs 2-5. *Solenopotes natalensis* spec. nov. 2. Female head. 3. Thoracic sternal plate. 4. Female genitalia. 5. Male genitalia.

*Solenopotes natalensis* spec. nov. is distinguished in the female from all other species by the presence of a median sclerotization between the gonapophyses, the shape of the vulval margin and the divergent gonapophyses with smooth apical margins extending hook-like laterally. The male is distinguished by the form of the genitalia, which are reminiscent of those in *S. binipilosis* (see Ferris, 1932, fig. 246 K & L), but with a differently shaped statumen penis, parameres and basal apodeme.

According to Ansell (1968) the host subspecies found from northern Natal to the eastern Transvaal is *Raphicerus campestris zuluensis* Roberts, 1946, but the status and range of the southern forms of *R. campestris* is somewhat uncertain, and it is likely that a future study of adequate series will result in a reduction in the number of acceptable subspecies.

It seems premature to attempt any discussion on host-parasite relationships at this stage, because of the likelihood that further *Solenopotes* from African antelopes await discovery and description.

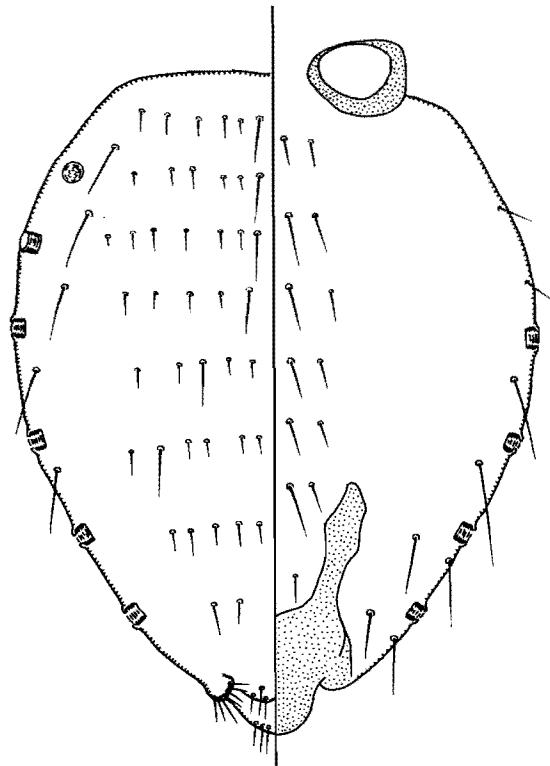


Fig. 6. *Solenopotes natalensis* spec. nov. Male abdomen, dorsal/ventral view.

## ACKNOWLEDGEMENTS

I thank Mr B. Lamoral, Natal Museum, for sending the specimens on which this paper is based, Dr K. C. Kim, Frost Entomological Museum, Pennsylvania, U.S.A., for his comments on *Solenopotes*, and Dr K. C. Emerson, Arlington, Virginia, U.S.A., for reading the manuscript, examining some specimens and for his comments and advice. Thanks are also due to Dr F. Zumpt for supervising my work, and to the Director of the South African Institute for Medical Research for providing research and library facilities.

## REFERENCES

- ANSELL, W. F. H. 1968. Smithsonian Institution Preliminary Identification Manual for African Mammals. No. 8. Artiodactyla (excluding the genus *Gazella*). Smithsonian Institution, Washington. ii + 207 pp.
- DU TOIT, R. 1968. The occurrence of the Capillate Louse, *Solenopotes capillatus* in South Africa. *J. S. Afr. vet. med. Ass.* **39** (4): 73-74.
- FERRIS, G. F. 1932. Contributions toward a Monograph of the Sucking Lice. Part V. *Stanford Univ. Pubs (Biol. Sci.)* **2** (5): 273-413.
- 1951. The Sucking Lice. *Mems Pacif. Cst ent. Soc.* **1**: 1-320.
- JOHNSON, P. T. 1958. Type specimens of lice (order Anoplura) in the United States National Museum. *Proc. U.S. natn. Mus.* **108** (3393): 39-49.
- 1962. Redescription of two cervid-infesting Anoplura from Southeast Asia. *Proc. ent. Soc. Wash.* **64**: 107-110.
- ROBERTS, F. H. S. 1950. The tail-switch louse of cattle, *Haematopinus quadripertitus* Fahrenholz. *Aust. vet. J.* **26**: 136-138.

Manuscript received 8 April 1970.